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**INTERMEDIATE M' 19 EXAM**

**SUBJECT- COSTING AND F.M.**

**Test Code – CIM 8118**

**(Date :)**

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**ANSWER-1**

(i) Statement showing the earnings of 3 workers on day basis and labour cost for 100 pieces .

Name of worker	Actual output (units)	Day wages @ Re. 0.75 per hour for 8 hrs.	Labour cost per 100 pieces
Achyuta	180	6.00	$(6 \times 100 \div 180) = \text{Rs. } 3.33$
Ananta	120	6.00	$(6 \times 100 \div 120) = \text{Rs. } 5.00$
Govinda	100	6.00	$(6 \times 100 \div 100) = \text{Rs. } 6.00$
	400	18.00	

Average cost of labour to produce 100 pieces

For 400 pieces, labour cost = Rs. 18

For 100 pieces, labour cost =  $(18 \times 100) / 400$  or Rs. 4.50

(ii) 10 units (standard hourly output) = Re. 0.75

100 units = Rs. 7.50

**(2.5 MARKS)**

(ii) Statement showing the earnings of 3 workers on piece rate basis and labour cost per 100 pieces

Name of worker	Actual output (units)	Piece wages @ Re. 0.075 per unit	Labour cost per 100 pieces
Achyuta	180	13.50	7.50
	120	9.00	7.50
Govinda	100	7.50	7.50
	400	30.00	

Average cost of labour  $(30 / 400) \times 100 = \text{Rs. } 7.50$  per 100 pieces.

**(1.5 MARKS)**

(iii) Statement showing the earnings of 3 workers under Halsey scheme and labour cost per 100 pieces

Name of worker	Actual output (Pieces)	Std. time for actual output (Hours)	Actual time taken (Hours)	Time saved (Hours)
Achyuta	180	$180 \div 10^* = 18$	8	10

Ananta	120	12	8	4
Govinda	100	10	8	2

\*One Standard hour — 10 units.

Name of worker	Earnings (Rs.)	Labour cost per 100 pieces (Rs.)
Achyuta	$8 \times 0.75 + [(50 \div 100) \times 10 \times 0.75]$ = 6.00 + 3.75 = Rs.9.75	$(9.75 \times 100) \div 180$ = Rs.5.42
Ananta	$8 \times 0.75 + [(50 \div 100) \times 4 \times 0.75]$ = 6.00 + 1.50 = Rs.7.50	$(7.50 \times 100) \div 120$ = Rs.6.25
Govinda	$8 \times 0.75 + [(50 \div 100) \times 2 \times 0.75]$ = 6.00 + 0.75 = Rs.6.75	$(6.75 \times 100) \div 100$ = Rs.6.75

Total earnings of 3 workers = Rs. (9.75 + 7.50 + 6.75) = Rs. 24.00

Average cost  $(24 \div 400) \times 100 = \text{Rs. } 6$  per 100 pieces.

**(3 MARKS)**

**(iv) Statement showing the earnings of 3 workers under Rowan Scheme and labour cost per 100 pieces**

Earnings = Hours worked x Rate per hour +  $\left( \frac{\text{Time saved}}{\text{Time allowed}} \right) \times \text{Hours worked} \times \text{Rate per hour}$

Name of worker	Earnings (Rs.)	Labour cost per 100 pieces (Rs.)
Achyuta	$8 \times 0.75 + (10/18 \times 8 \times 0.75)$ = Rs.6.00 + 3.33 = Rs.9.33	$100/180 \times 9.33 = 5.18$
Ananta	$8 \times 0.75 + (4/12 \times 8 \times 0.75)$ = Rs.6.00 + 2.00 = Rs.8.00	$100/120 \times 8.00 = 6.67$
Govinda	$8 \times 0.75 + (2/10 \times 8 \times 0.75)$ = Rs.6.00 + 1.20 = Rs.7.20	$100/100 \times 7.20 = 7.20$

Total earnings Rs. (9.33 + 8.00 + 7.20) = Rs. 24.53

Average labour cost for 100 pieces =  $(24.53 \div 400) \times 100 = \text{Rs. } 6.13$ .

**(3 MARKS)**

## ANSWER-2

(i) Actual direct labour cost per hour based on the given data

$$= \text{Rs. } 48,00,000 \div 4,80,000 = \text{Rs. } 10 \text{ per hour}$$

$$\text{Cost of potential hours lost} = 12,000 \text{ hrs.} \times \text{Rs. } 10 = \text{Rs. } 1,20,000$$

(ii) It is given that 12,000 man hours could not be availed of because of delayed replacement,

∴ Direct labour cost if there was no labour turnover

$$= \text{Rs. } 48,00,000 + \text{Rs. } 1,20,000 = \text{Rs. } 49,20,000$$

(iii) Potential loss of sales due to:

Hours lost for delayed replacement 12,000

Unproductive hours: 50% of 9,000 hrs. 4,500

Total hours lost 16,500

(iv) Actual hours of labour spent 4,80,000

Less: Unproductive labour hours 4,500

4,75,500

Sales related to productive hours = Rs. 6,00,00,000

∴ Potential loss of sales due to 16,500 hours lost

$$= (6,00,00,000 \div 4,75,500 \text{ hrs.}) \times 16,500 \text{ hrs.} = \text{Rs. } 20,82,019$$

Total sales if there had been no labour turnover

$$= \text{Rs. } 6,00,00,000 + \text{Rs. } 20,82,019 = \text{Rs. } 6,208,2019$$

Other variable expenses (i.e., including material) are Rs. 2,10,00,000 for a sales of Rs.6,00,00,000.

$$= (2,10,00,000 \div 6,00,00,000) \times \text{Rs. } 6,20,82,019 = \text{Rs. } 2,17,28,707.$$

**(7 MARKS)**

**Comparative statement showing the loss of profit due to labour turnover**

	Actual	If labour turnover was Nil
Sales (A)	Rs.6,00,00,000	Rs.6,20,82,019
Direct labour	48,00,000	49,20,000
Other variable costs	2,10,00,000	2,17,28,707
Fixed cost	80,00,000	80,00,000
Separation replacement cost	1,00,000	-
Total cost (B)	3,39,00,000	3,46,48,707
Profit (A) – (B)	2,61,00,000	2,74,33,312

Loss of profit due to labour turnover: Rs. 2,74,33,312 - 2,61,00,000 = Rs. 13,33,312.

**(3 MARKS)**

**ANSWER-3**

Particulars	Rs.
Total Sales	Rs. 200 lakhs
Credit Sales (80%)	Rs. 160 lakhs
Receivables for 40 days	Rs. 80 lakhs
Receivables for 120 days	Rs. 80 lakhs
Average collection period [(40 x 0.5) + (120 x 0.5)]	80 days
Average level of Receivables (Rs. 1,60,00,000 x 80/360)	Rs.35,55,556
Factoring Commission (Rs. 35,55,556 x 2/100)	Rs.71,111
Factoring Reserve (Rs. 35,55,556 x 10/100)	Rs. 3,55,556
Amount available for advance {Rs. 35,55,556 - (3,55,556 + 71,111)}	Rs.31,28,889
Factor will deduct his interest 18% : Interest = $\frac{\text{Rs.}31,28,889 \times 18 \times 80}{100 \times 360}$	Rs. 1,25,156
Advance to be paid (Rs. 31,28,889 - Rs. 1,25,156)	Rs.30,03,733

**(5 MARKS)**

**(i) Statement Showing Evaluation of Factoring Proposal**

	Rs.
<b>A. Annual Cost of Factoring to the Firm:</b>	
Factoring commission (Rs. 71,111 x 360/80)	3,20,000
Interest charges (Rs. 1,25,156 x 360/80)	5,63,200
Total	8,83,200
<b>B. Firm's Savings on taking Factoring Service:</b>	<b>Rs.</b>
Cost of credit administration saved	2,40,000
Bad Debts (Rs. 160,00,000 x 1/100) avoided	1,60,000

	Total	4,00,000
C.	Net Cost to the firm (A - B) (Rs. 8,83,200 - Rs. 4,00,000)	4,83,200

$$\text{Effective cost of factoring} = \frac{\text{Rs.4,83,200}}{\text{Rs.30,03,733}} \times 100 = 16.09\% \text{ *}$$

\* If cost of factoring is calculated on the basis of total amount available for advance, then, it will be

$$= \frac{\text{Rs.4,83,200}}{\text{Rs.31,28,889}} \times 100 = 15.44\%$$

- (ii) If Bank finance for working capital is available at 14%, firm will not avail factoring service as 14% is less than 16.08% (or 15.44%) **(5 MARKS)**

#### ANSWER-4

- (i) **Calculation of Cost of Capital for each source of capital:**

- (a) Cost of Equity share capital:

$$K_e = \frac{D_0 (1+g)}{\text{Market Price per share } (P_0)} + g = \frac{4(1+0.08)}{\text{Rs.40}} + 0.08$$

$$= \frac{\text{Rs.4.32}}{\text{Rs.40}} + 0.08 = 0.188 \text{ or } 18.8\%$$

- (b) Cost of Preference share capital ( $K_p$ ) = 11%  
(c) Cost of Debentures ( $K_d$ ) =  $r(1-t) = 14\%(1-0.4) = 8.4\%$   
(d) Cost of Retained Earnings ( $K_s$ ) =  $K_e(1-t_p) = 18.8(1-0.2) = 15.04\%$

**(3 MARKS)**

- (ii) **Weighted Average Cost of Capital (WACC) on the basis of book value weights**

Source	Amount (Rs.)	Weights (a)	After tax Cost of Capital (%) (b)	WACC (%) (c) = (a) × (b)
Equity share	50,00,000	0.50	18.80	9.40
Retained earnings	13,00,000	0.13	15.04	1.96
11% Preference share	7,00,000	0.07	11.00	0.77
14% Debentures	30,00,000	0.30	8.40	2.52
	1,00,00,000	1.00		14.65

**(3 MARKS)**

(iii) **Weighted Average Cost of Capital (WACC) on the basis of market value weights**

Source	Amount (Rs.)	Weights (a)	After tax Cost of Capital (%) (b)	WACC (%) (c) = (a) × (b)
Equity share	1,05,00,000	0.70	18.80	13.16
11% Preference share	9,00,000	0.06	11.00	0.66
14% Debentures	36,00,000	0.24	8.40	2.016
	1,50,00,000	1.000		15.836

**Note:** The cost of equity can be calculated without taking the effect of growth on dividend.

Accordingly WACC can be calculated.

**(4 MARKS)**

**ANSWER-5**

**1. Capital employed before expansion plan:**

**(2 MARKS)**

	(Rs.)
Equity shares (Rs.10 × 80,000 shares)	8,00,000
Debentures {(Rs. 1,20,000/12) X 100}	10,00,000
Retained earnings	12,00,000
Total capital employed	30,00,000

**2. Earnings before the payment of interest and tax (EBIT):**

**(1 MARK)**

	(Rs.)
Profit (EBT)	3,00,000
Interest	1,20,000
EBIT	4,20,000

**3. Return on Capital Employed (ROCE):**

**(1 MARK)**

$$\text{ROCE} = \frac{\text{EBIT}}{\text{Capital employed}} \times 100 = \frac{\text{Rs.4,20,000}}{\text{Rs.30,00,000}} \times 100 = 14\%$$

**4. Earnings before interest and tax (EBIT) after expansion scheme:**

**(1 MARK)**

$$\text{After expansion, capital employed} = \text{Rs. 30,00,000} + \text{Rs.4,00,000} = \text{Rs. 34,00,000}$$

$$\text{Desired EBIT} = 14\% \times \text{Rs.34,00,000} = \text{Rs.4,76,000}$$

(i) **Computation of Earnings Per Share (EPS) under the following options: (4.5 MARKS)**

	Present situation (Rs.)	Expansion scheme Additional funds raised as	
		Debt Rs.	Equity Rs.
Earnings before interest and Tax (EBIT)	4,20,000	4,76,000	4,76,000
Less : Interest			
- Old Capital	1,20,000	1,20,000	1,20,000
- New Capital	-	48,000 (Rs.4,00,000 x 12%)	-
Earnings before Tax (EBT)	3,00,000	3,08,000	3,56,000
Less : Tax (50% of EBT)	1,50,000	1,54,000	1,78,000
PAT	1,50,000	1,54,000	1,78,000
No. of shares outstanding	80,000	80,000	1,20,000
Earnings per Share (EPS)	1.875 $\left( \frac{\text{Rs.1,50,000}}{80,000} \right)$	1.925 $\left( \frac{\text{Rs.1,54,000}}{80,000} \right)$	1.48 $\left( \frac{\text{Rs.1,78,000}}{1,20,000} \right)$

(ii) **Advise to the Company:** When the expansion scheme is financed by additional debt, the EPS is higher. Hence, the company should finance the expansion scheme by raising debt.

**(0.5 MARKS)**

**ANSWER-6**

(i) Determination of EPS at EBIT of Rs. 5,50,000

Particulars	Alt-1 : Equity share	Alt 2: Bonds	Alt 3: Preference shares
EBIT	5,50,000	5,50,000	5,50,000
Less: Interest	<u>4,000</u>	<u>18,000</u>	<u>4,000</u>
Taxable income	5,46,000	5,32,000	5,46,000
Less: taxes @ 50%	<u>2,73,000</u>	<u>2,66,000</u>	<u>2,73,000</u>
Income after taxes	2,73,000	2,66,000	2,73,000
Less: dividend on preference shares	10,000	10,000	24,875
Earnings available for equity shareholders	2,63,000	2,56,000	2,48,125
No. of equity shares	45,000	40,000	40,000
<b>EPS</b>	<b>Rs. 5.84</b>	<b>Rs. 6.40</b>	<b>Rs. 6.20</b>

**(5 MARKS)**



(ii) Equivalency level of Earnings between Common stock and Debt plan:

$$\frac{(x - I_1)(1 - t) - P_1}{N_1} = \frac{(x - I_1 - I_2)(1 - t) - P_1}{N_2}$$

Where X = EBIT

I = Interest rate

t = tax rate

P = Dividend to preference shareholders

N = no. of equity shares

$$\text{or, } \frac{(X - \text{Rs. } 4,000)(0.5) - \text{Rs. } 10,000}{45,000} = \frac{(X - \text{Rs. } 4,000 - \text{Rs. } 14,000)(0.5) - \text{Rs. } 10,000}{40,000}$$

$$\text{Or, } \frac{0.5X - \text{Rs. } 12,000}{45,000} = \frac{0.5X - \text{Rs. } 19,000}{40,000}$$

$$\text{or, } 20,000 X - \text{Rs. } 48,00,00,000 = 22,500 X - \text{Rs. } 85,50,00,000$$

$$X (\text{EBIT}) = \text{Rs. } 1,50,000$$

**(3 MARKS)**

(iii) Equivalency level of Earnings between preferred stock and common stock plan:

$$\frac{(X - I_1)(1 - t) - P_1 - P_2}{N_2} = \frac{(X - I_1)(1 - t) - P_1}{N_1}$$

$$\text{Or, } \frac{(X - \text{Rs. } 4,000)(0.5) - \text{Rs. } 24,875}{40,000} = \frac{(X - \text{Rs. } 4,000)(0.5) - \text{Rs. } 10,000}{45,000}$$

$$\text{or, } 22,500 X - \text{Rs. } 12,09,37,50,000 = 20,000 X - \text{Rs. } 48,00,00,000$$

$$X (\text{EBIT}) = \text{Rs. } 2,91,750$$

**(2 MARKS)**